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# United States Patent [19]

Sheen et al.

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[54] **REAL-TIME WIDEBAND CYLINDRICAL HOLOGRAPHIC SURVEILLANCE SYSTEM**

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**Related U.S. Application Data**

[63] Continuation-in-part of Ser. No. 440,279, May 12, 1995, Pat. No. 5,557,283, which is a continuation-in-part of Ser. No. 212,432, Mar. 14, 1994, Pat. No. 5,455,590, which is a continuation-in-part of Ser. No. 963,204, Nov. 23, 1992, abandoned, which is a continuation-in-part of Ser. No. 752,750, Aug. 30, 1991, abandoned.

[51] **Int. Cl.**[6] ..... **G01S 13/89**; G03H 5/00

[52] **U.S. Cl.** ..... **342/179**; 367/8

[58] **Field of Search** ..... 342/179; 367/8; 364/827

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[57] **ABSTRACT**

A wideband holographic cylindrical surveillance system including a transceiver for generating a plurality of electromagnetic waves; antenna for transmitting the electromagnetic waves toward a target at a plurality of predetermined positions in space; the transceiver also receiving and converting electromagnetic waves reflected from the target to electrical signals at a plurality of predetermined positions in space; a computer for processing the electrical signals to obtain signals corresponding to a holographic reconstruction of the target; and a display for displaying the processed information to determine nature of the target. The computer has instructions to apply Fast Fourier Transforms and obtain a three dimensional cylindrical image.

**9 Claims, 7 Drawing Sheets**